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1: J Lipid Mediat Cell Signal. 1997 Mar;15(3):255-84.

ELSEVIER Links  
FULL-TEXT ARTICLE**Platelet-activating factor and cardiac diseases: therapeutic potential for PAF inhibitors.****Feuerstein G, Rabinovici R, Leor J, Winkler JD, Vonhof S.**Department of Cardiovascular, UW2511, SmithKline Beecham Pharmaceuticals,  
King of Prussia, PA 19406-0939, USA.

Platelet-activating factor (PAF) is a potent phospholipid mediator released from inflammatory cells in response to diverse immunologic and non-immunologic stimuli. Animal studies have implicated PAF as a major mediator involved in coronary artery constriction, modulation of myocardial contractility and the generation of arrhythmias which may bear on cardiac disorders such as ischemia, infarction and sudden cardiac death. PAF effects are induced by direct actions of PAF on cardiac tissue to modify chronotropic and inotropic activity, or indirectly via the release of eicosanoids such as thromboxane A<sub>2</sub> (TXA<sub>2</sub>), leukotrienes (LT) or cytokines (TNF alpha). The development of selective, high affinity PAF receptor antagonists has permitted investigations on the role of PAF in experimental animal models of cardiac injury. In vivo and in vitro studies strongly suggest that PAF receptor antagonists might convey therapeutic benefits in ischemic conditions and certain arrhythmias. In addition, PAF antagonists might have a cardiac allograft-preservation effect. Although clinical studies with PAF receptor antagonists in patients with cardiac diseases have not yet been reported, the experimental results to date suggest that PAF receptor antagonists might be useful in some specific cardiac disorders in humans.

PMID: 9041476 [PubMed - indexed for MEDLINE]

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Role of platelet-activating factor in cardiovascular pathophysiology. [Physiol Rev. 2000]

Existence of PAF receptors in human platelets and human lung tissue but not in the human myocardium. [Am Heart J. 1992]

Role of nitric oxide and platelet-activating factor in cardiac alterations induced by tumor necrosis factor-alpha in the guinea-pig papillary muscle. [Cardiovasc Res. 1999]

Actions of platelet-activating factor on isolated rat hearts. [Circ Shock. 1991]

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☐ 1: [Lipids](#). 1991 Dec;26(12):1257-63.

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### Platelet-activating factor in cardiovascular stress situations.

**Rabinovici R, Yue TL, Feuerstein G.**

Cardiovascular Pharmacology, SmithKline Beecham Laboratories, King of Prussia, Pennsylvania 19406-0939.

Since the elucidation of its chemical structure two decades ago, platelet-activating factor (PAF) has emerged as an important mediator of various cardiovascular stress situations. Most notably, PAF was implicated as a key factor in the septic shock syndrome, based on the similarities between endotoxin and PAF biological effects, the elevation of circulating and tissue levels of PAF during endotoxemia, and the protective effect of PAF antagonists in the septic state. In addition, accumulating data suggest the involvement of PAF in the pathophysiological processes associated with ischemia, hemorrhage and trauma, where PAF exerts its effects directly on cells and blood elements or indirectly through interactions with other mediators such as cytokines and prostaglandins. Nevertheless, the relative contribution of PAF to the pathophysiological processes in endotoxemia is still unknown and should await further investigations. The primary aims of this chapter are: to delineate the effects of PAF on the cardiovascular system, to summarize the data which suggest the involvement of PAF in stress situations of the cardiovascular system, and to identify areas where future experimental efforts should be focused.

PMID: 1819713 [PubMed - indexed for MEDLINE]

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Effects of a platelet-activating factor antagonist, CV-3988, on different shock models in the rat. [Circ Shock. 1986]

Platelet-activating factor and shock. [Prog Biochem Pharmacol. 1988]

Comparative hemodynamics and cardiovascular effects of endotoxin and platelet-activating factor in the rat. [Circ Shock. 1990]

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AN 1994:160728 BIOSIS  
DN PREV199497173728  
TI An anti-platelet activating factor  
antibody and its effects on platelet aggregation.  
AU Tatsumi, Noriyuki [Reprint author]; Terano, Yoshitake; Hashimoto, Kohzoh;  
Hiyoshi, Motofumi; Matsuura, Shiro  
CS Dep. Clinial Lab. Med., Osaka City Univ. Med. Sch., 1-5-7 Asahimachi,  
Abeno, Osaka, 545, Japan  
SO Osaka City Medical Journal, (1993) Vol. 39, No. 2, pp. 167-174.  
CODEN: OCMJAJ. ISSN: 0030-6096.  
DT Article  
LA English  
ED Entered STN: 8 Apr 1994  
Last Updated on STN: 8 Apr 1994  
CC Cytology - Human 02508  
Biochemistry studies - Proteins, peptides and amino acids 10064  
Biochemistry studies - Lipids 10066  
Biochemistry studies - Carbohydrates 10068  
Blood - Blood cell studies 15004  
Endocrine - General 17002  
Immunology - Immunopathology, tissue immunology 34508  
IT Major Concepts  
Blood and Lymphatics (Transport and Circulation); Cell Biology;  
Clinical Endocrinology (Human Medicine, Medical Sciences); Endocrine  
System (Chemical Coordination and Homeostasis)  
IT Miscellaneous Descriptors  
L-ALPHA-LYSOPHOSPHATIDYLCHOLINE PALMITOYL  
ORGN Classifier  
Hominidae 86215  
Super Taxa  
Primates; Mammalia; Vertebrata; Chordata; Animalia  
Organism Name  
Hominidae  
Taxa Notes  
Animals, Chordates, Humans, Mammals, Primates, Vertebrates

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IT Major Concepts  
Blood and Lymphatics (Transport and Circulation); Cell Biology;  
Clinical Endocrinology (Human Medicine, Medical Sciences); Endocrine  
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IT Miscellaneous Descriptors  
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ORGN Classifier  
Hominidae 86215  
Super Taxa  
Primates; Mammalia; Vertebrata; Chordata; Animalia  
Organism Name  
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Taxa Notes  
Animals, Chordates, Humans, Mammals, Primates, Vertebrates

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L1	34 S (PLATELET ACTIVATING FACTOR ANTIBOD?)
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L3	27 DUPLICATE REMOVE L1 (7 DUPLICATES REMOVED)
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L3	27 DUPLICATE REMOVE L1 (7 DUPLICATES REMOVED)
L4	19 S L3 AND PD<1999

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AN 1990:514666 BIOSIS

DN PREV199090131942; BA90:131942

TI HYDROLYSIS OF 2 ACYL-SN-GLYCERO-3-PHOSPHOCHOLINES IN GUINEA-PIG  
HEART MITOCHONDRIA.

AU BADIANI K [Reprint author]; PAGE L; ARTHUR G

CS DEP BIOCHEM MOL BIOL, FAC MED, UNIV MANITOBA, 770 BANNATYNE AVE, MANIT,  
CANADA R3E 0W3

SO Biochemistry and Cell Biology, (1990) Vol. 68, No. 9, pp. 1090-1095.  
CODEN: BCBIEQ. ISSN: 0829-8211.

DT Article

FS BA

LA ENGLISH

ED Entered STN: 19 Nov 1990  
Last Updated on STN: 19 Nov 1990

AB Although both 2-acyl-sn-glycero-3-phosphocholine and  
1-acyl-sn-glycero-3-phosphocholine may be produced from  
phosphatidylcholine hydrolysis, studies on the former have lagged behind  
that of the latter. In this study a lysophospholipase A2 that hydrolyses  
2-acyl-sn-glycero-3-phosphocholine has been characterized in  
guinea pig heart mitochondria. The lysophospholipase A2 activity was not  
dependent on Ca<sup>2+</sup> and was inhibited differentially by saturated and  
unsaturated fatty acids. This lysophospholipase A2 activity was able to  
discriminate among different molecular species of 2-acyl-sn-glycero-3-  
phosphocholines when they were presented individually or in pairs.  
The order of decreasing rates of hydrolysis of different molecular species  
of 2-lysophosphatidylcholines, when the substrates were  
presented singly, was 18:2 > 20:4 > 18:1 > 16:0. A differential  
inhibition of the rate of hydrolysis of the individual substrates was  
observed when the substrates were presented in pairs. The degree of  
inhibition was dependent on the molar ratio of the mixed substrates. The  
characteristics of the enzyme suggest that involvement in the selective  
release of fatty acids from mitochondrial phosphatidylcholine would depend  
on a high selectivity of phospholipase A1 for different molecular species  
of phosphatidylcholine. A lysophospholipase A1 activity was also  
characterized in the mitochondria with a distinct acyl specificity from  
the lysophospholipase A2. Other characteristics of the two  
lysophospholipases suggest that the two reactions are not catalyzed by the  
same enzyme.

CC Biochemistry studies - Proteins, peptides and amino acids 10064  
Biochemistry studies - Lipids 10066  
Enzymes - Physiological studies 10808  
Anatomy and Histology - Microscopic and ultramicroscopic anatomy 11108  
Metabolism - Lipids 13006  
Cardiovascular system - Physiology and biochemistry 14504

IT Major Concepts  
Cardiovascular System (Transport and Circulation); Enzymology  
(Biochemistry and Molecular Biophysics); Metabolism; Morphology

IT Miscellaneous Descriptors  
FATTY ACID RELEASE

ORGN Classifier  
Caviidae 86300  
Super Taxa  
Rodentia; Mammalia; Vertebrata; Chordata; Animalia  
Taxa Notes  
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals,  
Rodents, Vertebrates

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AN 1990:514666 BIOSIS

DN PREV199090131942; BA90:131942

TI HYDROLYSIS OF 2 ACYL-SN-GLYCERO-3-PHOSPHOCHOLINES IN GUINEA-PIG  
HEART MITOCHONDRIA.

AU BADIANI K [Reprint author]; PAGE L; ARTHUR G

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phosphatidylcholine hydrolysis, studies on the former have lagged behind  
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2-acyl-sn-glycero-3-phosphocholine has been characterized in  
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presented singly, was 18:2 > 20:4 > 18:1 > 16:0. A differential  
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inhibition was dependent on the molar ratio of the mixed substrates. The  
characteristics of the enzyme suggest that involvement in the selective  
release of fatty acids from mitochondrial phosphatidylcholine would depend  
on a high selectivity of phospholipase A1 for different molecular species  
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the lysophospholipase A2. Other characteristics of the two  
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Biochemistry studies - Lipids 10066  
Enzymes - Physiological studies 10808  
Anatomy and Histology - Microscopic and ultramicroscopic anatomy 11108  
Metabolism - Lipids 13006  
Cardiovascular system - Physiology and biochemistry 14504

IT Major Concepts  
Cardiovascular System (Transport and Circulation); Enzymology  
(Biochemistry and Molecular Biophysics); Metabolism; Morphology

IT Miscellaneous Descriptors  
FATTY ACID RELEASE

ORGN Classifier  
Caviidae 86300  
Super Taxa  
Rodentia; Mammalia; Vertebrata; Chordata; Animalia  
Taxa Notes  
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals,  
Rodents, Vertebrates



AN 1989:443834 BIOSIS  
DN PREV198988092106; BA88:92106  
TI MEASUREMENT OF CHOLINE AND CHOLINE METABOLITE CONCENTRATIONS USING  
HIGH-PRESSURE LIQUID CHROMATOGRAPHY AND GAS CHROMATOGRAPHY-MASS  
SPECTROMETRY.  
AU POMFRET E A [Reprint author]; DACOSTA K-A; SCHURMAN L L; ZEISEL S H  
CS NUTRIENT METABOLISM LAB, DEP PEDIATR, BOSTON UNIV SCH MED, 85 EAST NEWTON  
ST, ROOM M1002, BOSTON, MASS 02118, USA  
SO Analytical Biochemistry, (1989) Vol. 180, No. 1, pp. 85-90.  
CODEN: ANBCA2. ISSN: 0003-2697.  
DT Article  
FS BA  
LA ENGLISH  
ED Entered STN: 4 Oct 1989  
Last Updated on STN: 6 Oct 1989  
AB We have developed a reproducible and sensitive procedure for the isolation  
and measurement of choline, phosphocholine,  
glycerophosphocholine, phosphatidylcholine,  
lysophosphatidylcholine and acetylcholine in a single 100-mg  
sample of biological tissue. Tissues were spiked with <sup>14</sup>C-methyl- and  
<sup>2</sup>H-methyl- or <sup>15</sup>N-choline labeled internal standards for each compound.  
They were extracted with chloroform/methanol/water and the aqueous and  
organic phases were dried. The organic phase was resuspended in  
chloroform/methanol (1/1, v/v) and an aliquot was applied to a silica-gel  
thin-layer chromatography plate. The plate was developed in  
chloroform/methanol/water (65/30/4, v/v). Segments which  
cochromatographed with external standards of phosphatidylcholine and  
lysophosphatidylcholine were stained, scraped, and hydrolyzed in 6  
M methanolic-HCl at 80° C for 60 min, liberating free choline.  
The aqueous phase was resuspended in methanol/water and injected onto a  
silica HPLC column. Choline and its metabolites were eluted using a  
binary nonlinear gradient of acetonitrile/ethanol/acetic acid/1 M ammonium  
acetate/water/0.1 M sodium phosphate (800/68/2/3/127/10, v/v changing to  
400/68/44/88/400/10, v/v). Peaks were detected with an on-line  
radiometric detector, collected, and dried under vacuum. Each choline  
ester was digested in 6 M HCl at 80° C to form choline. Choline  
was then converted to the propionyl ester and demethylated with sodium  
benzenethiolate. This volatile derivative was then isolated using gas  
chromatography and measured with a mass selective detector. Deuterated  
internal standards were used to correct for variations in recovery.  
Choline, glycerophosphocholine, phosphocholine,  
phosphatidylcholine, lysophosphatidylcholine, and acetylcholine  
were measured in rat liver, heart, muscle, kidney, plasma, red blood  
cells, and brain and in human plasma. This method may be useful in a  
variety of studies concerned with choline metabolism, including  
investigation in areas of nutrition, membrane biochemistry, and  
neurosciences.  
CC Cytology - Animal 02506  
Comparative biochemistry 10010  
Biochemistry methods - Lipids 10056  
Biochemistry studies - Lipids 10066  
Biophysics - Methods and techniques 10504  
Biophysics - Molecular properties and macromolecules 10506  
Physiology - Comparative 12003  
Metabolism - Lipids 13006  
Digestive system - Physiology and biochemistry 14004  
Cardiovascular system - Physiology and biochemistry 14504  
Blood - Blood and lymph studies 15002  
Blood - Blood cell studies 15004  
Urinary system - Physiology and biochemistry 15504  
Muscle - Physiology and biochemistry 17504  
Nervous system - Physiology and biochemistry 20504  
IT Major Concepts

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AN 1989:443834 BIOSIS

DN PREV198988092106; BA88:92106

TI MEASUREMENT OF CHOLINE AND CHOLINE METABOLITE CONCENTRATIONS USING HIGH-PRESSURE LIQUID CHROMATOGRAPHY AND GAS CHROMATOGRAPHY-MASS SPECTROMETRY.

AU POMFRET E A [Reprint author]; DACOSTA K-A; SCHURMAN L L; ZEISEL S H

CS NUTRIENT METABOLISM LAB, DEP PEDIATR, BOSTON UNIV SCH MED, 85 EAST NEWTON ST, ROOM M1002, BOSTON, MASS 02118, USA

SO Analytical Biochemistry, (1989) Vol. 180, No. 1, pp. 85-90.  
CODEN: ANBCA2. ISSN: 0003-2697.

DT Article

FS BA

LA ENGLISH

ED Entered STN: 4 Oct 1989  
Last Updated on STN: 6 Oct 1989

AB We have developed a reproducible and sensitive procedure for the isolation and measurement of choline, phosphocholine, glycerophosphocholine, phosphatidylcholine, lysophosphatidylcholine and acetylcholine in a single 100-mg sample of biological tissue. Tissues were spiked with <sup>14</sup>C-methyl- and <sup>2</sup>H-methyl- or <sup>15</sup>N-choline labeled internal standards for each compound. They were extracted with chloroform/methanol/water and the aqueous and organic phases were dried. The organic phase was resuspended in chloroform/methanol (1/1, v/v) and an aliquot was applied to a silica-gel thin-layer chromatography plate. The plate was developed in chloroform/methanol/water (65/30/4, v/v). Segments which cochromatographed with external standards of phosphatidylcholine and lysophosphatidylcholine were stained, scraped, and hydrolyzed in 6 M methanolic-HCl at 80° C for 60 min, liberating free choline. The aqueous phase was resuspended in methanol/water and injected onto a silica HPLC column. Choline and its metabolites were eluted using a binary nonlinear gradient of acetonitrile/ethanol/acetic acid/1 M ammonium acetate/water/0.1 M sodium phosphate (800/68/2/3/127/10, v/v changing to 400/68/44/88/400/10, v/v). Peaks were detected with an on-line radiometric detector, collected, and dried under vacuum. Each choline ester was digested in 6 M HCl at 80° C to form choline. Choline was then converted to the propionyl ester and demethylated with sodium benzenethiolate. This volatile derivative was then isolated using gas chromatography and measured with a mass selective detector. Deuterated internal standards were used to correct for variations in recovery. Choline, glycerophosphocholine, phosphocholine, phosphatidylcholine, lysophosphatidylcholine, and acetylcholine were measured in rat liver, heart, muscle, kidney, plasma, red blood cells, and brain and in human plasma. This method may be useful in a variety of studies concerned with choline metabolism, including investigation in areas of nutrition, membrane biochemistry, and neurosciences.

CC Cytology - Animal 02506  
Comparative biochemistry 10010  
Biochemistry methods - Lipids 10056  
Biochemistry studies - Lipids 10066  
Biophysics - Methods and techniques 10504  
Biophysics - Molecular properties and macromolecules 10506  
Physiology - Comparative 12003  
Metabolism - Lipids 13006  
Digestive system - Physiology and biochemistry 14004  
Cardiovascular system - Physiology and biochemistry 14504  
Blood - Blood and lymph studies 15002  
Blood - Blood cell studies 15004  
Urinary system - Physiology and biochemistry 15504  
Muscle - Physiology and biochemistry 17504  
Nervous system - Physiology and biochemistry 20504

IT Major Concepts

Biochemistry and Molecular Biophysics; Blood and Lymphatics (Transport and Circulation); Cardiovascular System (Transport and Circulation); Cell Biology; Digestive System (Ingestion and Assimilation); Metabolism; Methods and Techniques; Muscular System (Movement and Support); Nervous System (Neural Coordination); Physiology; Urinary System (Chemical Coordination and Homeostasis)

IT Miscellaneous Descriptors

RAT HUMAN LIVER HEART MUSCLE KIDNEY PLASMA RED BLOOD CELLS BRAIN

ORGN Classifier

Hominidae 86215

Super Taxa

Primates; Mammalia; Vertebrata; Chordata; Animalia

Taxa Notes

Animals, Chordates, Humans, Mammals, Primates, Vertebrates

ORGN Classifier

Muridae 86375

Super Taxa

Rodentia; Mammalia; Vertebrata; Chordata; Animalia

Taxa Notes

Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates

RN 62-49-7 (CHOLINE)

Biochemistry and Molecular Biophysics; Blood and Lymphatics (Transport and Circulation); Cardiovascular System (Transport and Circulation); Cell Biology; Digestive System (Ingestion and Assimilation); Metabolism; Methods and Techniques; Muscular System (Movement and Support); Nervous System (Neural Coordination); Physiology; Urinary System (Chemical Coordination and Homeostasis)

IT Miscellaneous Descriptors

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ORGN Classifier

Hominidae 86215

Super Taxa

Primates; Mammalia; Vertebrata; Chordata; Animalia

Taxa Notes

Animals, Chordates, Humans, Mammals, Primates, Vertebrates

ORGN Classifier

Muridae 86375

Super Taxa

Rodentia; Mammalia; Vertebrata; Chordata; Animalia

Taxa Notes

Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals,

Rodents, Vertebrates

RN 62-49-7 (CHOLINE)

ANSWER 14 OF 17 MEDLINE on STN

AN 89322894 MEDLINE

DN PubMed ID: 2665794

TI Regulation of phosphatidylcholine metabolism in mammalian hearts

AU Hatch G M; O K; Choy P C

CS Department of Biochemistry, Faculty of Medicine, University of Manitoba, Winnipeg, Canada.

SO Biochemistry and cell biology = Biochimie et biologie cellulaire, (1989 Feb-Mar) Vol. 67, No. 2-3, pp. 67-77. Ref: 104

Journal code: 8606068. ISSN: 0829-8211.

CY Canada

DT Journal; Article; (JOURNAL ARTICLE)  
(RESEARCH SUPPORT, NON-U.S. GOV'T)  
General Review; (REVIEW)

LA English

FS Priority Journals

EM 198908

ED Entered STN: 9 Mar 1990  
Last Updated on STN: 9 Mar 1990  
Entered Medline: 31 Aug 1989

AB Phosphatidylcholine is the major phospholipid in the mammalian heart. Over 90% of the cardiac phosphatidylcholine is synthesized via the CDP-choline pathway. The rate-limiting step of this pathway is catalyzed by CTP:phosphocholine cytidyltransferase. Current evidence suggests that phosphatidylcholine biosynthesis in the heart is regulated by the availability of CTP and the modulation of cytidyltransferase activity. Phosphatidylcholine is degraded mainly by the actions of phospholipase A1 and A2, with the formation of lysophosphatidylcholine. Lysophosphatidylcholine may be further deacylated by lysophospholipase or reacylated back into the parent phospholipid by the action of acyltransferase. The accumulation of lysophosphatidylcholine in the heart may be one of the biochemical factors for the production of cardiac arrhythmias.

CT Animals  
\*Heart: PH, physiology  
\*Mammals: ME, metabolism  
Mammals: PH, physiology  
\*Myocardium: ME, metabolism  
\*Phosphatidylcholines: ME, metabolism  
Phosphatidylcholines: PH, physiology

CN 0 (Phosphatidylcholines)